Table 2.2–2. TEP Mitigation Practices Included in the Proposed Action (*continued*).

21. As smoke is a conductor of electric current, when a fire is in the vicinity of the proposed 345-kV transmission lines, firefighters would monitor for possible fire starts outside the fire perimeter. Firefighters would remain at a distance that would not leave them vulnerable to the electric current or shock.
22. Practices such as cleaning of construction equipment, to prevent the introduction of spread of invasive species, would be developed and followed in accordance with applicable requirements.

2.3 COMPARISON OF ALTERNATIVES

Table 2.3–1 presents a comparison of the alternatives based on the analysis in Chapter 4.

The resource areas evaluated for potential impacts are:

- Land use
- Recreation
- Visual resources
- Biological resources
- Cultural resources
- Socioeconomics
- Geology and soils
- Water resources
- Air quality
- Noise
- Human health and safety
- Infrastructure
- Transportation
- Minority and low-income populations (environmental justice)
- Cumulative impacts

The following discussion emphasizes the environmental implications of choosing among alternatives, organized by resource area. Where impacts are similar among the Western, Central, and Crossover Corridors, these alternatives are referred to collectively as the action alternatives (as compared to the No Action Alternative). Both temporary impacts during construction (approximately 12 to 18 months) and long-term impacts during operation of the project are considered. This discussion is followed by Table 2.3–1, which provides a more quantitative look at the differences among alternatives. In general, the No Action Alternative has the least impact on the environment as it does not involve ground disturbing activities or introduction of a transmission line into the visual landscape. Each action alternative impacts different resources in different ways, as described below.

Land Use. The Central Corridor is shorter than the Western and Crossover Corridors. The Western and Crossover Corridors each have a longer segment on the Coronado National Forest than the Central Corridor. All three corridors are identical with respect to BLM land and cross the U.S.-Mexico border in the same location.

Temporary land use impacts would occur as a result of support structure construction areas, staging areas, and temporary access roads that would be re-vegetated in accordance with agreements with land owners or managers and closed following construction. Besides physically changing the use of the land either temporarily or permanently, land use changes can impact all other resource areas as described below. Monopoles, which would be the primary support structure used by TEP, require a smaller area of disturbance (25 ft^2 [2.3 m^2]) than lattice tower structures (3,600 ft^2 [334 m^2]), and lattice towers require more ongoing access for maintenance. The temporary area of new disturbance on the Coronado National Forest would be greatest for the Crossover Corridor, followed by the Western Corridor and the Central Corridor. The total land area occupied by the final footprint of the towers for the entire corridor is less than 0.3 acres (0.12 ha) for each action alternative. In addition, access roads would be required to some support structures.

A Forest Plan amendment would be required to implement any of the three proposed corridors on national forest land. Because the Central Corridor has the longest segment that follows or crosses an existing EPNG pipeline ROW, fewer new access roads would be required than for the other alternatives, although considerable upgrade would be required for some existing pipeline ROW access roads. On BLM land, the project is adjacent to existing transmission lines within a utility corridor. Outside the Coronado National Forest, each proposed corridor is compatible with current land use and land use plans.

Recreation. Activities in the project area include hiking, biking, birding, photography, rock climbing, horseback riding and off-road vehicle use. These activities are mostly concentrated within portions of the Coronado National Forest, and along the east side of the Tumacacori Mountains where the Central Corridor follows outside of the Coronado National Forest boundary. Off-road vehicle use occurs more broadly throughout the project area. The primary impact to these activities would be a change in the visual setting where recreation occurs. None of the three corridors are visible from Peña Blanca Lake on the Coronado National Forest, a popular location for recreation.

In addition, DOE, in consultation with USFS performed a USFS Recreation Opportunity Spectrum (ROS) analysis for the proposed project on national forest land evaluating the project's impact on seven setting indicators (characteristics) established by USFS that contribute to a recreation experience. USFS provided the following language in summary of this analysis:

> The Central Corridor would minimize the total mileage on national forest land and would impact three setting indicators (Remoteness, Naturalness, and Facilities and Site Management) in an inconsistent[1] or unacceptable[2] way. The Western and Crossover Corridors would impact the same three setting indicators on national forest land as the Central Corridor. The Crossover Corridor is the only alternative with major impacts to a Semi-Primitive Non-Motorized area (approximately 3 mi [5 km] through the Peck Canyon inventoried roadless area [IRA]). The Western and Crossover Corridors would have higher total mileage on national forest lands than the Central Corridor. Accordingly, the Western and Crossover Corridors would have greater overall impacts than the Central Corridor to ROS settings on the Coronado National Forest.

Visual. Visual impacts would occur from the introduction of steel support structures, access roads, and transmission line wires into the landscape. Structures would be primarily 140-ft (43-m) high self-weathering monopoles, similar in color to wood utility poles. With the exception of a reduction in

[1] As defined in the ROS, inconsistent means conditions that are not generally compatible with the norm, but may be necessary under some circumstances to meet management objectives.

[2] As defined in the ROS, unacceptable means conditions that, under any circumstance, do not fall within the maintenance of a given class. Where unacceptable conditions are unavoidable, a change in the ROS setting will often result, which must be handled appropriately in the USFS NEPA planning process.

existing High Scenic Integrity (degree of intactness and wholeness of the landscape) associated with the Western and Crossover Corridors near the Pima and Santa Cruz County line, the existing Moderate to Low Scenic Integrity would not be reduced for the area crossed by each corridor outside of the Coronado National Forest, including the BLM land. The Central Corridor has the longest length outside of the Coronado National Forest, and would be intermittently visible to more residents than the other corridors given its closer proximity to the towns of Amado, Tubac, and Tumacacori.

On the Coronado National Forest, per analysis using the USFS Scenery Management System (SMS), the area of land that would have reduced Scenic Integrity as a result of construction and operation of the Western or Crossover Corridors is approximately double the area of reduced Scenic Integrity for the Central Corridor. The Western Corridor would be in wide-open view from a longer stretch of Concern Level 1 (primary) travelways on and nearby the Coronado National Forest than the Central or Crossover Corridors would be. While siting the Western Corridor transmission line immediately adjacent to portions of Ruby Road would have a maximum visual impact along Ruby Road, it would protect the viewshed to the south (towards the Pajarita Wilderness) for the public (including photographers) and would eliminate the need for highly visible access roads in this portion of the Western Corridor.

The Central Corridor would minimize the total mileage on national forest land resulting in reduced Scenic Integrity of approximately 9,668 acres (3,912 ha) on national forest land. The Western and Crossover Corridors would have higher total mileage on national forest lands than the Central Corridor, and the Western and Crossover Corridors would result in approximately 18,511 to 18,736 acres (7,491 to 7,582 ha) of reduced Scenic Integrity on national forest lands. Accordingly, the Western and Crossover Corridors would have greater overall visual impact on the Coronado National Forest than the Central Corridor.

Biological Resources. There is a potential for impacting habitat of existing native plant communities located within the ROW and new access road areas during construction. Clearing would be limited to areas required for access roads and structures. Because the proposed project would be in an arid area, where vegetation recovers very slowly, disturbances due to construction could have long-term impacts.

The Western Corridor has the highest potential for adverse effects to special status species. None of the proposed corridors cross any federally designated Critical Habitat for any threatened or endangered species. The corridors include the current range and habitat types for 7 to 10 species listed under the ESA. The federally listed endangered Pima pineapple cactus is known to occur in each of the three proposed corridors. Additional species-specific surveys would be conducted for the selected corridor before construction activities begin. DOE has initiated consultation under Section 7 (a)(2) of the ESA with the U.S. Fish and Wildlife Service (USFWS). The formal consultation process between DOE, USFS, BLM, and USFWS will begin when DOE tenders its biological assessment of the alternatives to USFWS.

Cultural Resources. Consultation under Section 106 of the NHPA with the State Historic Preservation Officer (SHPO) and Native American communities/tribes/nations has been initiated and is ongoing. Multiple prehistoric and historic archaeological sites have been identified within each corridor, though a large percentage of each corridor has not been surveyed. A low density of cultural resource sites would be expected along most of the Western and Crossover Corridors; a higher density of cultural resource sites would be expected along the Central Corridor segment near the Santa Cruz River. Although there may be a greater number of cultural resource sites in the Central Corridor, the majority of these have already been disturbed by construction of the existing EPNG pipeline. The impacts would be based on the area of land disturbance, and on the overall impact to the landscape. A Cultural Resource survey of the proposed ROW prior to construction would mitigate impacts.

DOE initiated government-to-government consultation with the tribal governments of the 12 Native American communities/tribes/nations that are likely to have traditional concerns in the area:

- Ak-Chin Indian Community
- Fort Sill Apache Tribe
- Gila River Indian Community
- Hopi Tribe
- Mescalero Apache Tribe
- Pascua Yaqui Tribe
- Salt River Pima-Maricopa Indian Community
- San Carlos Apache Tribe
- Tohono O'Odham Nation
- White Mountain Apache Tribe
- Yavapai Apache Nation
- Pueblo of Zuni

Consultation has included information-sharing meetings with DOE and its representatives, and site visits arranged at the tribes' requests. (Note that the initial tribal consultations were for the Western, Central, and Eastern Corridors, originally proposed by TEP; refer to the following paragraph for a description of introduction of the Crossover Corridor in tribal consultations.) Representatives of several tribes have stated that they are opposed to the project, but they would prefer that the project be constructed along the Central Corridor, if it is to be built at all. Tribal consultations are ongoing. No specific traditional cultural properties (TCPs) have been identified along either the Western or the Central Corridors to date by the above consulted tribes.

DOE representatives have presented the Crossover Corridor, developed in response to public and tribal input during scoping, to tribal representatives from the Tohono O'Odham Nation, Gila River Indian Community, Salt River Pima Maricopa and Ak-Chin Indian Communities as well as the Intertribal Council of Arizona. Noting that the Crossover Corridor is in largely undisturbed territory, tribal representatives have stated that the project be constructed along the Central Corridor, but tribal consultations are ongoing.

Socioeconomics. The construction costs of each of the three action alternatives are roughly similar, approximately $70 million plus or minus $7 million. The construction of any of the three proposed corridors would create approximately 30 direct (construction) jobs, and approximately 31 indirect (service-related) jobs, which would benefit Santa Cruz and Pima Counties. No influx of population or stress to community services would be expected from project construction. No socioeconomic impacts would be expected from project operation because most jobs created would be filled by current residents.

During the public scoping process for the Draft Environmental Impact Statement (EIS), several commentors expressed concern that existence of the proposed transmission line would negatively impact real property values. In this context, any decrease in property values would be perception-based impact, that is, an impact that does not depend on actual physical environmental impacts resulting directly from the proposed project, but rather upon the subjective perceptions of prospective purchasers in the real estate market at any given time. Courts have long recognized that such subjective, psychological factors are not readily translatable into quantifiable impacts. See, for example, *Hanly v. Kleindienst*, 471 F.2d 823, 833 n.10 (2d Cir. 1972), *cert. denied*, 412 U.S. 908, (1973). People do not act consistently in accordance with negative perceptions, and one person's negative perception might be another's positive. Also, perceptions of value may change over time, and perceptions of value are affected by a host of other factors that have nothing to do with the proposed project. Accordingly, any connection between public

perception of a risk to property values and future behavior would be uncertain or speculative at best, and therefore would not inform decision making.

There have been studies of the impact of transmission lines and property values in other geographic areas. See, for example, discussion of these studies in the *Environmental Impact Statement for Schultz-Hanford Area Transmission Line Project* (DOE 2002). Based on these studies, DOE can conclude only that, at worst, it is possible that there might be a small negative economic impact of short duration to some properties from the project, and that the impact on value would be highly variable, individualized, and unpredictable. The studies at most conclude that other factors, such as general location, size of property, and supply and demand factors, are far more important criteria in determining the value of residential real estate.

Accordingly, while DOE recognizes that a given property owner's value could be affected by the project, DOE has not attempted to quantify theoretical public perceptions of property values should the proposed project be built.

Geology and Soils. The construction of any of the three proposed corridors would not impact geologic resource availability or mine tailing piles west of Interstate 19 in the northern portion of the project. Slope stability analysis for potential tower locations in mountainous areas would prevent slope failure. Low to moderate seismic risk would be considered in structure design. Direct embedment pole construction techniques (requiring excavation) would be used in unconsolidated soils, while rock bolted bases would be used in areas of relatively intact bedrock near the ground surface. Best Management Practices (BMPs) to minimize soil and water impacts would be developed in coordination with USFS, BLM, and ADEQ before construction, and would be implemented for the entire corridor selected.

All three proposed corridors cross small areas of soils considered to be prime farmland when irrigated.

Water Resources. No adverse impacts to surface water or groundwater resources from any of the three action alternatives or the no action alternative. Each of the three proposed corridors would span across a number of drainages and washes, and TEP would avoid placing structures in and near these areas where feasible.

The South Substation expansion and some corridor access roads would be within the Santa Cruz River or other 100-year floodplain and could result in an increase in flood elevation, leading to an increase in downstream flood loss and a long-term negative impact on lives and property. The Western and Crossover Corridors would have the greatest potential to impact floodplains in the project area. Impacts resulting from pole placement and construction of laydown areas would be negligible.

There may be small areas of wetlands within the proposed corridors that are associated with manmade stockponds and impoundments. TEP would site the transmission line to avoid such areas. None of the corridors cross any eligible or designated Wild and Scenic Rivers.

Restrictions on refueling locations would protect groundwater from contamination from fuel, lubricants and other fluids during construction. BMPs would be implemented along the length of the line for erosion control.

Air Quality. There are no significant differences in air quality impacts from any of the three action alternatives or the no action alternative. Temporary, localized fugitive dust emission impacts from construction activities would occur. Impacts from operation and maintenance activities would be limited to dust from occasional access by TEP. A conformity review of the proposed project (required under Section 176[c] of the *Clean Air Act*) was conducted in accordance with U.S. Environmental Protection Agency (EPA) and DOE guidance. The review shows that construction project emissions of PM_{10}

(particulate matter with an aerodynamic diameter less than or equal to 10 microns) and CO (carbon monoxide) for each alternative are below regulatory thresholds and would not constitute a regionally significant action.

Noise. There are no significant differences in noise impacts from any of the three action alternatives or the no action alternative. Noise levels would increase above background during construction of any action alternative. Temporary construction noise increases would primarily impact residents in Sahuarita and Nogales for all three corridors, and also Amado, Tubac, and Tumacacori for the Central Corridor. Temporary construction noise would also impact recreationalists, especially in more remote areas of the Western and Crossover Corridors. Long-term noise from the corona effect on transmission lines would generally be lost in background noise. Gateway and South Substations operational noise would be near background levels for the nearest receptors.

Human Health and Environment. Long term electric and magnetic field (EMF) exposure at the nearest residences, schools, and commercial establishments would be well below average daily exposure to maximum magnetic fields (0.8 milligauss) from some common household appliances. There would be no health effects from this exposure. Though each proposed corridor passes primarily through undeveloped land, the Central Corridor would have the highest number of houses in close proximity to the transmission line. The project would be designed to minimize EMF and prevent electrical field effects. A minimum distance of 100 ft (30 m) would be maintained between any of the proposed transmission line structures and the edge of the existing EPNG pipeline ROW.

Infrastructure. There are no significant differences in infrastructure impacts from any of the three action alternatives. The proposed project would increase electric transmission facilities to Nogales, Arizona and Mexico, but would not otherwise affect existing infrastructure. Minimal municipal solid waste generated during construction and operation would be taken to appropriate landfill facilities. No hazardous waste would be generated from substation operation.

Transportation. Project access would be on existing utility maintenance roads, ranch access roads and trails, and new access ways where no access currently exists. Because the Central Corridor has the longest segment following the EPNG pipeline ROW, fewer temporary new access roads would be required than for the other alternatives, although considerable upgrade would be required for existing pipeline ROW access roads. Access to the proposed project on BLM land would be the same for all three action alternatives, on existing access from Mission Road to TEP's current transmission lines, with new spur roads to the proposed project. Short-term traffic disruptions on major roads such as I-19 or Ruby Road could occur during construction.

On the Coronado National Forest, the Crossover Corridor passes through an IRA, although no roads would be constructed or reconstructed in an IRA for any of the action alternatives. (Helicopters would be used to insert structures as needed for the Crossover Corridor.) TEP would build more miles of temporary new roads for the Western or Crossover Corridors than for the Central Corridor. In addition, more areas on existing roads would require minor repairs for the Western and Crossover Corridors than for the Central Corridor. By siting the Western Corridor immediately adjacent to Ruby Road for approximately 4 mi (6 km), the need for new project access and ongoing maintenance access for this segment would be reduced. There would be no net increase in roads in the Coronado National Forest.

Environmental Justice. Neither the three action alternatives nor the No Action Alternative would cause disproportionately high and adverse impacts to the minority or low-income populations. No means were identified for minority or low-income populations to be disproportionately affected from any of the resource areas.

Cumulative Impacts. This EIS includes analysis of cumulative impacts, as required under NEPA, that could occur as a result of the potential impacts of TEP's proposed project when added to impacts from

other past, present, and reasonably foreseeable future actions. The potential effects are evaluated both for the period of project construction (anticipated to be 12 to 18 months), and for the post-construction (operation) period of the project. The region of influence (ROI) varies for each resource area, primarily depending on the distance a potential effect can reach.

The following actions have been evaluated as reasonably foreseeable and are included in the analysis of cumulative impacts: other transmission line projects in the project area, industrial development, trade corridor/roadway development, other activities under special use permits on the Coronado National Forest, and more generally defined possible actions in the project area such as residential development, increased operations of the U.S. Border Patrol, ongoing activity of undocumented immigrants near the U.S.-Mexico border, and local initiatives to protect biological resources such as the Sonoran Desert Conservation Plan.

The cumulative impacts from the combination of TEP's proposed project and other past, present, and reasonably foreseeable actions could affect land use (including recreation), visual resources, biological resources, cultural resources, socioeconomic resources, geology and soils, water resources, air quality, noise, human health and environment, and transportation. These potential cumulative impacts are primarily related to long-term development of land that is currently undisturbed or used for other activities such as ranching and recreation. In the short term, if multiple projects are under construction simultaneously, an increased amount of land could be used temporarily for construction lay down yards and staging areas, and an increased amount of airborne dust could be generated. The cumulative change in land use could affect natural habitats, special status species, and cultural resources, and could lead to an increase in soil erosion and local water use. The cumulative impacts to human health and safety could be an increase in background EMF exposure to residents in the immediate vicinity of overlapping transmission line projects. No long-term cumulative human health impacts are expected to occur. No means were identified for minority or low-income populations to be disproportionately affected, and TEP's proposed project would not contribute cumulatively to any environmental justice impacts.